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ABSTRACT

One of the more promising approaches to instructional improvement in the face of increasing enrollments is the Coordinated Instruction System (CIS), which includes the use of television, slide-tape combinations, and programed instruction materials. This position paper sees the CIS technology as a way to extend and reinforce basic teacher-student relationships, and outlines the advantages to be gained through its use. It proposes a change in the current California State Education Code to permit needed development of these systems in the California junior colleges. Basically, the modification calls for a change in the Average Daily Attendance (ADA) apportionment for students enrolled in the CIS classes, an apportionment currently based on the total number of student contact hours (hours during which students are under immediate supervision of a certificated teacher). The change would involve defining "immediate supervision" for CIS programs under the Code as student participation under the coordination and evaluation of certificated college instructors, and determining CIS contact hours directly from enrollment and credit earned. As proposed, these changes are intended not to increase state financial support, but to remove an impediment to more effective and efficient instructional systems. [Because of marginal reproducibility of original, this document is not available in hard copy.] (JO)

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INCREASING THE EFFECTIVENESS OF COMMUNITY COLLEGE EDUCATIONAL PROGRAMS THROUGH THE USE OF COORDINATED INSTRUCTION SYSTEMS

A Position Paper on the Need to Modify
One Provision of California Education
Code Section 11251 for Community Colleges

UNIVERSITY OF CALIF.
LOS ANGELES

AUG 10 1970

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

JC 700 177

Presented by the California Junior College Association

In Cooperation with the California Community Colleges,
Office of the Chancellor

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AMENDED IN ASSEMBLY MAY 27, 1970
AMENDED IN ASSEMBLY APRIL 28, 1970
AMENDED IN ASSEMBLY APRIL 15, 1970

CALIFORNIA LEGISLATURE—1970 REGULAR SESSION

ASSEMBLY BILL No. 1171

Introduced by Assemblyman Fong

March 12, 1970

REFERRED TO COMMITTEE ON EDUCATION

An act to amend Section 11251 of the Education Code, relating to ~~junior~~ COMMUNITY college attendance.

The people of the State of California do enact as follows:

SECTION 1. Section 11251 of the Education Code is amended to read:

11251. (a) In computing the average daily attendance of a school district, there shall be included only the attendance of pupils while engaged in educational activities required of such pupils and under the immediate supervision and control of an employee of the district who possessed a valid certifica-

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AB 1171, as amended, Fong (Ed.). ~~Junior~~ *Community* college attendance.

Amends Sec. 11251, Ed.C.

Provides that student attendance and participation in approved coordinated instruction systems programs of instruction using various teaching techniques, under the coordination and evaluation of, but not requiring the immediate supervision of, a certificated employee, may be included in the computation of average daily attendance of a ~~junior~~ *community* college district *; requires such programs to be conducted by certificated employees who shall determine the need for immediate supervision thereof; requires such certificated employees to evaluate individual student progress and assign appropriate grades in such programs*.

Provides that state aid apportionments shall not be greater than one-half the current costs of conducting such programs.

Vote—Majority; Appropriation—No; Fiscal Committee—No.

tion document, registered as required by law, authorizing him to render service in the capacity and during the period in which he served. For purposes of computing the average daily attendance of a ~~junior~~ *community* college district, attendance shall also include student attendance and participation in approved coordinated instruction systems programs of instruction using television, computer-assisted instruction, automated audio-visual systems, programmed learning materials, and other similar teaching techniques, under the coordination and evaluation of an employee who possessed an appropriate certification document, but not requiring the immediate supervision of such employee. Approved coordinated instruction systems programs of instruction are those recommended by the governing board of the district maintaining the ~~junior~~ *community* college and approved by the Board of Governors of the California Community Colleges. One student contact hour is to be counted for each unit of coordinated instruction systems credit in which a student is enrolled during any census period. The state aid apportionment made by the board of governors shall not be greater than one-half the current costs of conducting approved coordinated instruction systems programs of instruction. *Coordinated instruction systems programs of instruction shall be conducted by employees of the district who possess valid credentials or certification documents, who shall determine the need for immediate supervision of the programs of instruction. Such employees shall evaluate individual student progress and assign appropriate grades for students enrolled in classes taught by the coordinated instruction systems programs of instruction.*

(b) The State Department of Education shall, in cooperation with the Department of Finance and the Legislative Analyst, conduct a study to devise a suitable method for determining the number of units of average daily attendance for a fiscal year, of pupils in grades kindergarten through 12 enrolled in elementary districts, high school districts, and unified districts. Such method shall be based upon the mean average of active enrollment figures on appropriate dates throughout the school year, multiplied by a proven percentage ratio of enrollment to average daily attendance.

If the method devised will yield approximately the same total number of average daily attendance as is now obtained by existing methods specified in this code and such method has been approved by the State Board of Education, it shall be recommended to the Legislature to be used for all computations of average daily attendance in the regular day classes of the elementary and high schools.

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ASSEMBLY BILL 1171 : FONG

FACT SHEET: LEGISLATION ON COORDINATED INSTRUCTION SYSTEMS

COMMUNITY COLLEGES IN THE 1970's will carry a greater share of responsibility for the higher education of America's young people. Growth and development trends point to the need for an ever-increasing supply of college educated citizens having para-professional and professional competence. To meet this challenge community colleges need to adopt more effective and efficient instructional systems.

COORDINATED INSTRUCTION SYSTEMS, combining the resources of modern technology with traditional procedures, increase the effectiveness and efficiency of community college instruction. Television instruction, computer-assisted instruction, automated slide-sound tapes, single concept film loops and other technical resources serve to strengthen the teaching process.

THE ROLE OF COMMUNITY COLLEGE INSTRUCTORS is expanded with Coordinated Instruction Systems to encompass more instructional development, learning, management and evaluation of student progress. Instruction is more flexible with greater opportunity for student success. Educational progress and competency of students is coordinated and evaluated by professional community college instructors.

INCREASED LEVELS OF STUDENT SUCCESS are assured through multiple opportunities for viewing lectures, supporting explanation of new concepts on automated slide-sound tapes, opportunity for small group seminars and provision for instructor conferences. Community college instruction is more effective, more efficient, and at the same time more personalized through greater availability of instructors for direct conference and evaluation of student progress.

NO INCREASE IN COST results from using coordinated instruction systems in community college education, other than initial program development expenses. California community college students can gain the benefits of expanded opportunities offered by coordinated instruction systems when ADA apportionment becomes available on an equal basis as with traditional classroom lecture.

LEGISLATION IS NEEDED to provide the same Average Daily Attendance ADA apportionment for students earning credit through community college coordinated instruction systems techniques as through traditional programs limited to classroom lecture techniques.

Prepared by Dr. Robert Bennett
San Mateo College District

It is the purpose of this position paper to call attention to the critical need for development of new coordinated instruction systems which combine classroom lecture with modern technology to improve the effectiveness and efficiency of instructional programs in community colleges; and to identify a problem area in the California Education Code which serves as a deterrent to progress toward this goal.

COMMUNITY COLLEGE GROWTH

As community colleges enter the 1970's they bear an ever increasing responsibility to provide high-quality education for a growing multitude of students. To cope with this expanded burden of responsibility the full resources of space-age technology and professional skill should be brought to focus on community college education.

Three factors appear to be most significant in bringing about the increasing rate of community college expansion.

1. Higher education in California is moving toward greater dependence upon undergraduate programs in community colleges, with state college and university emphasis on upper division and graduate studies.

2. Preparation of students for employment in the trillion dollar per year national economy predicted for the 1970's is an educational challenge. Production and marketing of goods and services at this level will have a significant impact on enrollments with community colleges serving as the primary source of young technicians and mid-management employees capable of advancement.

3. Changes are occurring in higher education as colleges respond to student and community pressures for improvements. New curricula, education relevant to the needs of the current generation, provision of special services to educationally disadvantaged students and concern for individual student goals and aspirations are called for. Community colleges are growing as a result of their positive response to these expressed needs.

INCREASING INSTRUCTIONAL EFFECTIVENESS

As community colleges grow in size and complexity there is a corresponding need for growth in ability to meet individual learning needs of students. The measure of effectiveness of colleges in the future will be determined not so much by program content, as by success in developing instructional techniques which reach out to provide college education for individuals in all walks of life.

Procedures for developing student motivation and self-direction in learning are important for community college students, particularly because of diversity in educational background. Community college student populations can be characterized now and in the foreseeable future as rapidly growing in size, diverse in interest and capability, seeking higher level employment and educational goals and needing special instructional services to upgrade individual skills and knowledge.

THE NEED FOR IMPROVING INSTRUCTION SYSTEMS

Prominent educators are saying that a fundamental weakness in higher education today is the almost universal application of the classroom system and the pattern of learning experiences that accompanies it. This pattern is neither comfortable nor highly effective for the community college learner, as it typically involves learning events that are segmented, one-way, transient, message-oriented and not under his control.

The lectures a student attends are normally rigidly scheduled, one-time events that vary a great deal from one class to another; and, unless recorded, have no opportunity for student review.

The lecture has definite uses, but logistically it is a poor way of transmitting information; and, instructionally, it is not the most effective tool for learning. Experts in learning techniques have come to

the conclusion that if instructors devoted less time to disseminating information which can be transmitted more efficiently in other ways, they would increase efficiency and gain time and energy for discourse and for student questions.

In the lecture approach to teaching, it is rarely found that instructional strategies are developed in terms of matching instruction with specific objectives and providing optimum conditions for growth toward these objectives. Too little recognition is given the simple fact that "telling" does not necessarily result in learning, and too little attention is given to the problem of defining what outcomes are actually expected of individual learning activities. Thus, patterns of teacher and learner activity often do not reflect a high degree of efficiency.

In colleges the practice of repeating multiple section live lectures intended primarily for conveying factual information is a common example of the misuse of instructor time. When replicable instructional episodes utilizing media are used for this type of learning, instructor time is freed for higher level teaching, discussions, evaluation, or for additional instructional development.

MORE EFFECTIVE INSTRUCTION WITH MODERN TECHNOLOGY

In an age of space exploration which makes use of the intricate workings of computers to land mankind on the moon and which transmits information about the landing and return by television around the world, educators have unusual opportunities for developing more effective instructional techniques, using modern technology.

For purposes of identification the term COORDINATED INSTRUCTION SYSTEMS will be used in this paper to describe new combinations of modern technology with traditional instruction to increase the effectiveness and efficiency of community college instruction.

COORDINATED INSTRUCTION SYSTEMS combine up-to-date learning methods including elements of group lecture, television instruction, small group seminars, computer-assisted instruction, audio-visual programmed instruction, single-concept film loops and individual tutoring under the coordination and evaluation of professional instructors.

Teachers have increased opportunity to meet with small groups and individuals, to update course objectives, to evaluate student progress and to improve lecture and demonstration for instruction media presentation.

Instruction emphasis using Coordinated Instruction Systems changes from classroom lecture to multiple learning activities. Single patterns of instruction cannot provide optimum learning for all students and space-age technology at its best cannot develop machines that will replace teachers. The real significance of Coordinated Instruction Systems is not the creation of innovations to change the mode of operation. Rather it is the purpose of Coordinated Instruction Systems to improve the total instructional process making it more effective and efficient in transmitting knowledge to the multitude of students seeking community college education.

Education is basically a human experience not a technological process. The greatest educational force we have discovered is the impact of one person upon another person. The greatest value of technological media is that they can extend and reinforce, but not substitute for the impact of a master teacher upon his pupils.

THE UNIT OF CREDIT AS THE SIGNIFICANT MEASURE FOR COORDINATED INSTRUCTION

Education needs to become more learner-centered with program content and instruction both viewed in terms of contributing to the learner's growth in knowledge or skill.

Learning can be more effectively directed if enrollment for college subject credit is the basis for assignment of student learners to specific amounts of time each week on coordinated instruction tasks. Having this total block of time, a community college instructor can specify in any combination he wishes a wide variety of learning activities, including reading, listening, viewing films or television, performing experiments, working with programmed learning devices, writing essays and reports, and engaging in discussions or conferences.

In effect, the unit of credit for coordinated instruction systems becomes the measure of significance, rather than the statistical concept of weekly student contact hours. For purposes of Coordinated Instruction Systems in community colleges, the unit of credit can be converted directly to weekly student contact hour equivalents for staff assignment and other essential functions. Regular instruction methods need not be changed. Coordinated Instruction Systems for community colleges are fully compatible with traditional methods of operation.

LEARNING CENTERS FOR COORDINATED INSTRUCTION SYSTEMS

The Coordinated Instruction Systems approach uses an instructional materials center or learning center concept. A wide variety of media and materials, including cross-media sets or packages, can be placed in one or more such centers, where the student does much of his study in the relevant subject matter area. Faculty offices can be located nearby to facilitate interaction. A well-organized instructional system combining independent study in such centers with adequate discussion and evaluation appears to be definitely superior to the conventional classroom system and may in fact render it obsolete in the not too distant future.

THE EXPANDED ROLE OF INSTRUCTOR IN THE COORDINATED INSTRUCTION SYSTEMS APPROACH

The following statements taken from Instructional Development in Higher Education: Basic Premises of a Learner-Centered Approach, by Eldon J. Ullmer, describes the expanded role of instructor in modern systems of transmitting knowledge.

> In this new environment, the main activities of an instructor become instructional development, learning management and evaluation. His traditional role as a dispenser of information and opinion is downgraded, as he assumes more professional duties. Principal among these are to constantly work on the development and implementation of the "ideal learning system" for his subject.
>
> Since the ultimate ideal is never reached, the instructor is continually engaged in a process of reviewing objectives, learning strategy, learning events and evaluation procedures. All of these components are integrated into a compatible learning system, and the instructor provides the learner with directions, or educational specifications, adequate for him to program himself through the system.
>
> The way in which the instructor makes use of his time is substantially altered in this type of plan. He might be engaged in full-time course development for lengthy periods of time. Or his schedule might be divided between course development and teaching in the new sense of the word. When engaged in teaching he does not need to meet "lecture classes" as they are typically structured today. Mediated instructional systems used in independent study or television for group instruction accounts for that type of activity to a large degree. Thus, for courses that have been properly developed there is no need for the instructor to spend a lot of time on "daily preparation" for the lecture.
>
> Normally, the instructor need not use his contact hours with students to give out verbal content--most textbooks contain more than anyone can learn anyway--but can use this time to carry on small group meetings in which higher level performance, involving creative and problem solving behavior, can be practiced and evaluated.
>
> Since the instructor serves as manager, counselor, commentator and model, he should be available to students for discussion and assistance for more than the present typical load of contact hours. He now spends more time meeting with students individually and in small groups. Evaluation also demands more time, since learners are evaluated in relation to established criteria, not in relation to each other.
>
> Just as the stature of the instructor is increased in this new learning environment, so is that of the student. The concept of "going to class" as it exists today is largely eliminated. So is the notion of keeping secret the details of the learning to be expected of students until examination time.

COORDINATED INSTRUCTION SYSTEMS INCLUDING TELEVISION

Television, recognized as the most fully developed and powerful modern technical instrument for the transmission of information, opens up many promising and innovative opportunities for instruction of community college students.

Television is many things. It is a teacher on camera teaching students directly. It is a resource person, who by means of television can provide information for many students at once. It is a demonstration magnifier giving everyone a front row seat. It is an instructional film distributed to student learners conveniently and with opportunity for recording and storage for reshowing. It is a group of students using television or video tape to produce their own programs. It is a student in a study carrel viewing a television monitor that at the touch of a button serves as a display device for data, for short single-concept films, for microfilm and for video tapes.

RESEARCH ON THE USE OF TELEVISION IN COORDINATED INSTRUCTION SYSTEMS AS THEY RELATE TO COMMUNITY COLLEGE INSTRUCTION

Dr. James Zigerell, Dean of TV Community College in Chicago, reported in the September 1969 issue of Educational Television magazine that television has had a significant impact on community college students in the Chicago area. During some semesters, to put the case in dramatic fashion, TV college has had a total credit enrollment equivalent to 800 full-time students. He goes on to relate that:

> About 275 students, more than 50% of whom were physically handicapped or inmates of state and federal penitentiaries, have been awarded the Associate in Arts degree for two years of college work completed entirely on television. Almost 1,800 graduates of the Chicago City College with the AA degree took an average of one semester's work through TV College.

COMPARISON OF EFFECTIVENESS

Excerpts taken from Learning from Television: What The Research Says, by Godwin Chu and Wilbur Schramm provides evidence of effectiveness.

A widely useful standard of comparison can be derived from performance on standardized tests. For example, after coordinated instruction systems including television had been installed in the Washington County School System, Hagerstown, Maryland, the performance of students was measured on the Iowa tests of achievement. These tests are given each year to hundreds of thousands of students throughout the country, and thus standards are established by which test scores in any one location can be compared with national averages. Thus, if Hagerstown students gained 1.9 years, measured against national norms, in 1.0 years of coordinated instruction, including television, as they did, this is rather impressive evidence of an efficient learning system. If the average level of Hagerstown mathematics students rose, during four years of coordinated instruction including television, from the 31st to the 84th percentile measured against national norms, as it did, then again this can be assumed to be efficient learning.

Intuitively, it would seem that television would not commend itself for use in teaching where most of the work consists of student practice (for example, a course in public speaking or typewriting) or where the essential part of the learning experience grows out of discussion between student and teacher or among students (for example, a seminar). But the basic speech course has been taught for a number of years by the Chicago Junior College system entirely by television except for two or three meetings on campus during the year, and the television students have done on the average at least as well as campus students taught conventionally. In a number of

instances, television has been used as an essential part of a speech course. Examples are Reid's experiment (1960) at the University of Missouri; Clevenger and Cobin (1959) at the University of Illinois; and Ivey and De Marco (1961) in the Arkansas public schools. In each of these, the performance of students taught in part by television was as good as, or better than, that of students taught conventionally, and there was some evidence of more favorable attitudes developing toward the course.

Pasewark (1957) conducted an experiment on teaching typewriting by television. Both the TV group and face-to-face group received 48-hour long typing lessons from the same instructor. At the end of the course, the television group students typed significantly faster than the face-to-face group students.

Meacham (1963) compared students in a clothing construction class. The television group did significantly better on laboratory performance than the face-to-face group students.

Kanner, Runyon and Desiderato (1954) reported on an experiment in which 400 Army trainees were taught basic military skills either by television or by conventional instruction. In five of seventeen tests given, the TV group scored significantly higher. In the remaining twelve tests no significant differences were found.

Gottschalk (1965) reported that college students learning German from closed-circuit television did significantly better in aural and reading comprehension than students taught by the conventional method.

Boone (1954) reported that Naval Academy midshipmen receiving instruction on electronics from television scored significantly higher than did the face-to-face groups.

Macomber (1956) compared television instruction and conventional instruction in a college human biology course. He found that the TV-taught students scored significantly higher than the face-to-face students.

Jacobs, Bollenbacher, and Keiffer (1961) tested the effectiveness of television in teaching mathematics to below-average students. In two of five comparisons on problem solving and concepts, the TV taught classes did significantly better.

Suchy and Baumann (1960) conducted a three-year experiment in which high school students were taught American history either by television or by conventional instruction. In both the first and the second year, the TV group scored significantly higher than the conventional instruction group.

TELEVISION PROVIDES SIGNIFICANT RESOURCES FOR COMMUNITY COLLEGE COORDINATED INSTRUCTION SYSTEMS

What is a Coordinated Instruction System including television contributing to the solution of community college instructional problems? Essentially, it is sharing and distributing teaching. It is serving as a pipe through which superior teaching, elaborate demonstrations, and otherwise scarce subject matter can be distributed more widely than would otherwise be possible. There is no magic about it, except the relative efficiency with which it can deliver teaching-learning experiences over wide areas.

It can share an expert teacher with a very large number of classes, rather than one. It can introduce a variety and quality of visual and auditory experiences and demonstrations that would be impossible for most individual instructors to equal, but are quite feasible for a Coordinated Instruction System. It can carry teaching where there are no other services--for example, to students who are handicapped or disadvantaged who cannot attend regular scheduled classes.

COMPUTER ASSISTED INSTRUCTION

Using typewriter-like terminals and visual display units linked by telephone lines to a master computer located hundreds of miles away, students through computer assisted instruction have access to libraries of educational facts not otherwise available. Programming of data can be accomplished in ways which allow individual students to progress through complicated studies with little direct supervision.

Under the counsel and direction of master teachers meeting with students as assistance is needed, it is possible for individual students to make spectacular progress toward specialized goals. The computer is available for around-the-clock study as the student has time and inclination for educational advancement. Evenings and weekends become prime time for study. The vast resources of computerized information are directly available as needed, and the master teacher's time is used effectively through individual and small group conferences by appointment.

Educational Technology magazine of April 1969 cites an example of computerized counseling assistance. A description is provided on how information gathered from standard counseling sources, such as the U. S. Department of Labor, is expanded and illustrated by 18,000 color pictures, charts, drawings and text stored on reels of motion picture film. With these materials at his fingertips, the student is able to identify career groupings which contain 1,600 occupations and explore 391 areas of advanced study. In addition he is able to obtain details on 1,500 colleges and universities.

Seated before the screen of an image display unit, the student loads a reel of film into the device after using the computer terminal typewriter to identify himself to the system. As he explores further, printed instructions from the computer tell him which subsequent reels to use. Under student control, images that relate to his interests are projected onto the unit's screen. After viewing pictures and questions, the student answers by touching a small keyboard on the unit just below the screen. The adjacent typewriter device prints out messages for the student, which makes his career and educational explorations personally relevant. Periodically, reports are automatically printed out on the typewriter. They summarize and inter-relate what the student has been learning in his explorations. This print-out serves as the basis for discussion with his counselor and instructors.

INDIVIDUALIZED COMPUTER ASSISTANCE

Another example of computer-assisted instruction is a demonstration project of the Hicksville, New York school system. The program serves 9,000 students located in 61 schools in nine states, with each student receiving individualized support from a computer located in Iowa City, Iowa. Although the students are in elementary and high schools there is immediate possibility for community college linkage to the system.

In an age of space exploration which depends upon innovative use of computer systems, there is every reason to extend this individualized computer assistance resource to the education of the nation's community college young people through the use of coordinated instruction systems.

PROGRAMMED OR AUTOMATED SLIDE-TAPE SYSTEMS FOR INSTRUCTION

A simple and yet extremely effective method for providing students with individualized instruction uses 35 millimeter slides projected in conjunction with tape recorded sound. Slide and tape units are synchronized through inaudible sound signals on a two-track sound system.

A series of colored slides is coordinated with tape-recorded instruction. The tape can be programmed to stop at any point and will not start again until the trainee pushes a "go" button. Since the tape can be stopped as often as needed for as long as may be required, even the most complex and time-consuming procedures may be worked through step-by-step. Progress is regulated by the trainee's ability to absorb the information and perform the work as instructed.

Combined with the stop-start features is a multiple choice question and answer system. At any point in the programs, instruction may be interrupted to ask the trainee a question or request solution to some problem germane to the training experience. The questions are presented with three possible answers. A unique switching device selects a pre-recorded answer appropriate to the trainee's choice.

The combination of trainee-paced, stop-start instruction, multiple choice questions and carefully developed visual support provides a programmed learning system of remarkable effectiveness.

The programmed instruction system provides an inbuilt guarantee of standardized instruction. Even the most diligent human teacher wavers occasionally--the machine never. Every presentation of the same lesson is alike; the material covered, the instructions offered, never vary. And, while the programmed learning system is attending to the standardized matter, the teacher is freed to do what the teacher does best; provide the particularized and personalized support each trainee requires.

Industrial training programs have also used the system with considerable success. In one application, training time for a particularly complex and demanding assembly operation was cut in half. Where it had once taken from six months to one year to train assemblers to full productivity, it now requires as little as ninety days.

The UCLA Junior College Research Review, ERIC Clearinghouse for Junior College Information publication of March 1969 describes an experiment in nursing education that points to the effectiveness of using coordinated instruction systems for community college students.

> At Delta College (Michigan) an experimental group of fifteen nursing students was instructed via an autorutorial method as opposed to the customary lecture technique that was applied to the sixteen-member control group. The experimental group met for fifteen minutes or less per week with their instructor and listened individually to five thirty-minute tape recordings. At the conclusion of the unit, both groups were given the same final examination, resulting in a 17 per cent higher rate of performance for the experimental group. As a result, the faculty began producing 8 mm films demonstrating nursing techniques and complex situations. This technique allows one nursing instructor to teach fifteen or more students in the clinical area without loss in quality of instruction. (ED 014 960)

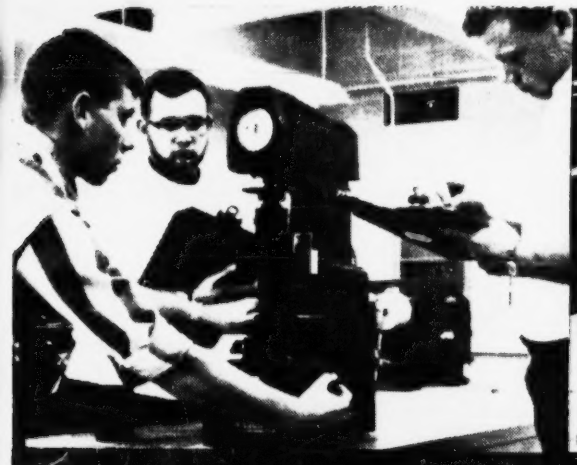
RESEARCH ON PROGRAMMED INSTRUCTION

Herbert and Foshay (1964) reporting on an experiment in Long Island, found that students taught English grammar by coordinated programmed instruction learned significantly more than conventionally taught students.

Brown, (1962) used a coordinated instruction program to teach mathematics to students. The experimental group had a combination of classroom instruction and programmed materials, while the control group received classroom teaching only. The experimental group was superior to the control group both in a test of general ability, and in eight out of nine achievement tests during the school term.

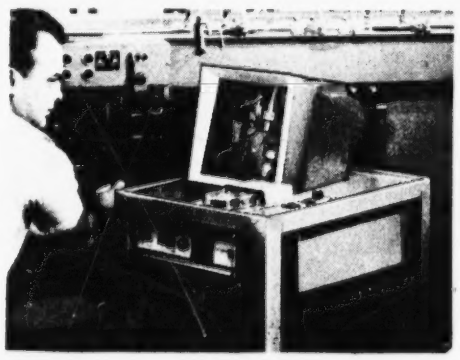
One of the more interesting findings on visual image use in Coordinated Instruction Systems was reported by Ketcham and Heath (1963). Undergraduate students in English were taught the life and work of William Wordsworth. The visual portion of the film did not directly illustrate the audio portion, but provided a background for the narration. For example, a summary of a poem was accompanied by the scene which inspired it, or the spot where it was composed. Or an event in the poet's life was accompanied by scenes from the place where it occurred. Students who saw the film learned significantly more than students who heard the sound narration only.

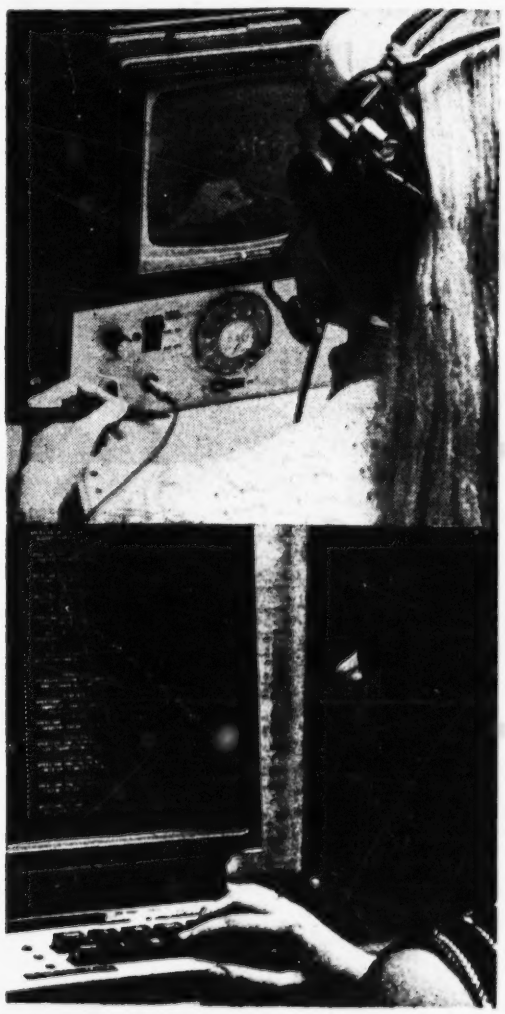
Tannenbaum (1956) presented lessons on periodontics to practicing dentists. Three of the experimental groups received both lectures and visual images, two groups from television and one group from a filmstrip. A fourth experimental group only studied written manuals. All three visual groups had significantly higher test scores than the control group.



COORDINATED INSTRUCTION SYSTEMS combine up-to-date learning methods including elements of group lecture, television instruction, small group seminars, computer assisted instruction, audio-visual programmed instruction, single concept film loops and individual tutoring under the coordination and evaluation of professional instructors.

Teachers have increased opportunity to meet with small groups and individuals, to update course objectives, to evaluate student progress and to improve lecture and demonstration for instruction media presentation.





Instruction emphasis changes from classroom lecture to multiple learning activities.

Flexible scheduling arrangements allow students to progress in accord with resources and ability. Courses may be completed concurrently or in series.

THE NEED TO MODIFY CALIFORNIA EDUCATION CODE SECTION 11251 FOR COMMUNITY COLLEGES

One major problem area stands as a deterrent to progress toward development of California Community college Coordinated Instruction Systems. The problem area will be stated as one of Restrictions on Flexibility in Average Daily Attendance (ADA) Apportionment for community colleges.

AVERAGE DAILY ATTENDANCE (ADA) APPORTIONMENT FOR COORDINATED INSTRUCTION SYSTEMS IN COMMUNITY COLLEGES

Development of adequate Coordinated Instruction Systems in California community colleges will not occur until changes are made in the procedure of ADA apportionment for students enrolled in these kinds of classes.

Programs must have an adequate base of financial support within the school budget if they are to exist. The financial support for this kind of instructional system should be fully as dependable as financial provision for more traditional instructional systems which are centered only in the classroom. If the Coordinated Instruction System concept is to grow in California, there is no alternative to adequate funding.

Serious attention should be given to modification of apportionment procedures to solve this problem. Under present conditions, colleges are not providing this form of educational experience. Community college students, for the most part, do not receive the unique benefits available through Coordinated Instruction Systems. As a further result, schools and communities bear the expense of less effective traditional classroom study for many students who could be served better by Coordinated Instruction Systems. Those students who are best motivated through self-direction and who can move forward rapidly toward educational goals are limited at the present time to traditional classroom instruction. Opportunity for student development through Coordinated Instruction Systems has been severely curtailed by the procedure currently used to determine apportionment for community colleges.

HOW IS APPORTIONMENT DETERMINED?

The amount of state apportionment for community colleges is determined by the total number of average daily attendance (ADA) units accumulated during the school year. This number is based upon a summary of the total number of student contact hours--a term used to identify the number of hours students are in "contact" with instructors in the classrooms of the college. Student contact hours are converted to units of average daily attendance (ADA).

SO WHAT IS THE PROBLEM?

Education Code Section 11251 states:

> In computing the average daily attendance of a school district, there shall be included only the attendance of pupils while engaged in educational activities required of such pupils and under the immediate supervision and control of an employee of the district who possessed a valid certification document, registered as required by law, authorizing him to render service in the capacity and during the period in which he served.

The definition of "immediate supervision" as it related to community college work experience programs has caused the problem of inadequate funding. High schools and community colleges are both covered by this provision. For the high schools, there is no problem of receiving full apportionment for all students since each one is in school for a full day of instruction. Provision for high school "immediate supervision" can be solved through several methods including new procedures for flexible scheduling.

However, for community colleges, under this same Education Code provision, "immediate supervision" is limited by definition only to those hours in which a student is in the classroom under instruction from the teacher. This places the community college at a substantial disadvantage in financial support under legislation which was intended to provide fair and equitable state support for all students.

Under the present limited definition of "immediate supervision" for apportionment purposes there is no possibility for community colleges to move forward in the development of more effective and efficient methods of instruction through the use of Coordinated Instruction Systems.

RECOMMENDATION FOR MODIFICATION OF CALIFORNIA EDUCATION CODE SECTION 11251 FOR COMMUNITY COLLEGE COORDINATED INSTRUCTION SYSTEMS

BACKGROUND

The procedure used at the present time to determine apportionment for community college students in Coordinated Instruction Systems classes does not provide the level of financial support accorded other educational instruction procedures.

RATIONALE

Fair and reasonable determination of student contact hours for apportionment purposes, in the case of Coordinated Instruction Systems classes will be more easily and accurately accomplished by (a) counting enrollment and credit earned as measures for student contact hour calculations; and
(b) for purposes of Coordinated Instruction Systems defining "immediate supervision" as student participation in approved Coordinated Instruction Systems programs using modern technology as television, computer assisted instruction, automated slide-tape systems and programmed learning materials to provide effective instruction under the coordination and evaluation of certificated college instructors.

These actions will serve to equalize the apportionment discrepancies which now exist.

RECOMMENDATION I-A

Student contact hours of community college students enrolled in Coordinated Instruction Systems courses should be determined directly from enrollment and credit earned.

Legislative action might be stated this way:

One student contact hour is to be counted for each unit of Coordinated Instruction Systems credit in which a community college student is enrolled during any census period.

RECOMMENDATION I-B

For purposes of community college Coordinated Instruction Systems, "immediate supervision" of instruction shall be defined as student participation in approved Coordinated Instruction Systems programs of instruction using modern technology as television, computer-assisted instruction, automated slide-tape systems, and programmed learning materials under the coordination and evaluation of certificated college instructors.

WHAT EFFECT WILL ADOPTION OF THIS PLAN HAVE ON COMMUNITY COLLEGE INSTRUCTION PROGRAMS?

California Education Code Section 17904 provides that equalization apportionment for community college average daily attendance units in excess of basic formula calculations shall be $643 per ADA unit.

Using this foundation figure of $643 as the cost per ADA, and assuming a 15 semester unit load as normal, one semester unit would generate $43 of foundation support. State financial support for Coordinated Instruction Systems, which should be equivalent to that provided for other programs, could be implemented by utilizing this figure.

Regular ADA apportionment support would allow districts to staff appropriately for Coordinated Instruction Systems and to effect the economies resulting from better utilization of instructor time and the more effective use of modern technology. It is evident that such savings, as well as greatly enhanced educational values, would more than justify reasonable state support for Coordinated Instruction Systems.

It should be clearly understood that the proposals outlined in this manuscript are not intended to increase the total amount of state financial support provided, nor will it serve that purpose. Rather, this is an effort to develop support for new kinds of community college instructional systems which have proven to be of high quality. The goal is to point out a weakness in the present apportionment procedure which serves as a deterrent to progress toward more efficient and effective community college instructional programs.

In view of the facts which have been presented to demonstrate the effectiveness of Coordinated Instruction Systems in community college education, and because of the inequity in the present system of financial apportionment to meet the needs of such programs, it is proposed that immediate efforts be undertaken to change the method of apportionment.

By legislative action, community colleges should begin receiving apportionment funds for those students enrolled in classes using the efficient and effective procedures of Coordinated Instruction Systems.

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The California Junior College Association in cooperation with the Office of Chancellor of California Community Colleges and other supporting organizations urges your support of these proposals and recommendations.

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